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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,587	10/18/2003	Brian A. Hamman	QNX002	2256

7590 07/02/2008

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EXAMINER	
CHERVINSKY, BORIS LEO	

ART UNIT	PAPER NUMBER
2835	

MAIL DATE	DELIVERY MODE
07/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/688,587	HAMMAN, BRIAN A.	
	Examiner	Art Unit	
	Boris L. Chervinsky	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *186-199,206-217 and 259-290* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *186-189,206-217,259 and 260* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 186, 188, 190, 193, 194, 196 are rejected under 35 U.S.C. 102(b) as being anticipated by Fox et al.

Fox discloses the cooling system for cooling heat-generating components in the data processing system having one or more processors 14 comprising: one or more heat transfer units 20 coupled to the heat-generating components 14 for receiving cooled coolant from a heat exchange unit 34 and generating heated coolant for transportation to the heat exchange unit 34; the heat exchange unit 34 remotely disposed from the heat transfer unit 20 and the heat generating components 14 for receiving heated coolant and generating cooled coolant; a forced circulation means 22 remotely disposed from the heat transfer unit 20 and the heat generating component 14 for forcing transporting at accelerated rates of cooled liquid coolant from the heat exchange unit 34 to the heat transfer unit 20 and for transporting heated coolant from the heat transfer unit 20 to the heat exchange unit 34; a liquid coolant pathway 24, 30, 38 for delivery of the cooled liquid coolant from the heat exchange unit 34 to the heat transfer unit 20 and for delivery of the heated liquid coolant from the heat transfer unit 20 to the heat exchange unit 34; and the cooling system has no component acting as a reservoir while

the cooling system is in operation; the heat exchange unit 34 has the inlet for receiving heated coolant from the heat transfer units and the outlet for receiving cooled coolant from the heat exchange unit 20 for transporting to the heat transfer unit 34, wherein the outlet is disposed below the inlet for enhancing convective circulation of the coolant (claim 188). The method steps of claims 194, 196 are necessitated by the device structure as disclosed by Fox et al.

3. Claims 259, 261, 263, 266, 267, 269, 271, 273-275, 279-283, 286, 287, 288 are rejected under 35 U.S.C. 102(b) as being anticipated by Cheon.

Cheon discloses complete, forced-circulation, liquid cooling system for cooling heat-generating components 8, 28 in an electronic system or data processing system with at least one processor comprising: one or more heat transfer units 12 coupled to one or more heat-generating components 8 for receiving cooled liquid coolant and generating heated liquid coolant by transfer of heat from the heat-generating components to the liquid coolant; a heat exchange unit 42, 46, 64, 48 having a heat dissipater 48, 64 for receiving heated liquid coolant from the heat transfer units 12 and generating cooled coolant for transportation to the heat transfer units; a forced circulation means P disposed within the heat exchange unit in proximity to the dissipater for forcing transportation, at accelerated rates, of cooled liquid coolant from the heat exchange unit to the heat transfer units 12 and of heated liquid coolant from the heat transfer units to the heat exchange unit; a liquid coolant pathway 70, 72, 74 for delivery of the cooled liquid coolant from the heat exchange unit to the heat transfer units 12 and for delivery of the heated liquid coolant from the heat transfer units to the heat exchange unit, and

the complete liquid cooling system has no component acting as a liquid coolant reservoir while the liquid cooling system is in operation considering that the element 48 structurally and functionally is similar to the claimed output cavity 212 that is not considered as the reservoir; the heat exchange unit has an inlet 54 for receiving heated liquid coolant from the heat transfer units and an outlet 56 for cooled liquid coolant for transportation to the heat transfer units 12, wherein the outlet is disposed below the inlet for enhancing convective circulation of the liquid coolant; the forced circulation means is a pump which is a self-priming pump; the pump includes an impeller 100, the motor 108, 104 and a shaft and requires no seal; the coolant pathways includes means for creating non-laminar flow 24 of the coolant for enhancing the transfer of heat from the coolant to the dissipater.

The method steps of claims 267, 269, 287 are necessitated by the device structure as disclosed by Cheon.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 187, 191, 192, 195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al.

With respect to claims 187 and 195, Fox discloses the claimed invention except positioning the inlet below the outlet. Several prior art references show such arrangement and since liquid circulation would be enhanced as well known convective circulation would be in effect it would have been obvious at the time the invention was made to a person having ordinary skill in the art to place the inlet below the outlet for that reason. With respect to claims 191 and 192, Fox discloses the claimed invention except the telecommunication system or optical device or the system with the at least one processor. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the system as disclosed by Fox et al. for a telecommunication system or an optical device since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

6. Claim189 and 197 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. in view of Bingler.

Fox discloses the claimed invention except the heat transfer unit where the coolant has the direct contact with the heat-generating component. Bingler discloses the heat transfer unit having the cavity that is at least partially open to the external surface of the heat-generating component therefore the coolant is in direct contact with the component. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the heat transfer unit as disclosed by Bingler in the device disclosed by Fox for unimpeded heat transfer.

7. Claims 198, 199, 208-213, 214, 215, 217 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. in view of Kang et al.

Fox discloses the claimed invention, as shown above for claim 186, except a heat exchange unit having an input and output cavity and a plurality of pathways. Kang discloses the cooling system having a heat exchange unit, the heat exchange unit comprising: an input cavity 2 for receiving heated coolant and distributing the heated coolant to the dissipater 4 having a plurality of pathways 3; the dissipater 4 is for receiving the heated coolant and cooling the coolant; an output cavity 6 for receiving the cooled coolant from the dissipater, and the cooling system has no component acting as a reservoir while the cooling system is in operation, the input cavity disposed above the output cavity. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the heat exchange unit as disclosed by Kang in the structure disclosed by Fox for enhanced heat dissipation. With respect to claims 211 and 212, Fox discloses the claimed invention except the telecommunication system or optical device or the system with the at least one processor. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the system as disclosed by Fox et al. for a telecommunication system or an optical device since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). The method steps of claims 214 and 215 are necessitated by the device structure as disclosed by Fox and modified in view of

Kang. With respect to claim 217, the method steps are necessitated by the device structure as disclosed by Fox and modified by Kang and obvious for the same consideration as was given for claims 187 and 195.

8. Claim 216 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. in view of Kang et al. and further in view of Bingler.

The method steps are necessitated by the device disclosed by Fox et al. except the heat transfer unit where the coolant has the direct contact with the heat-generating component. Bingler discloses the heat transfer unit having the cavity that is at least partially open to the external surface of the heat-generating component therefore the coolant is in direct contact with the component. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the heat transfer unit as disclosed by Bingler in the device disclosed by Fox for unimpeded heat transfer.

9. Claims 260, 264, 265, 268, 272, 276-278, 284, 285, 290 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon.

With respect to claims 260, 268, 273, 276-278 and 290, Cheon discloses the claimed invention except positioning the inlet below the outlet. Several prior art references show such arrangement and since liquid circulation would be enhanced as well known convective circulation would be in effect it would have been obvious at the time the invention was made to a person having ordinary skill in the art to place the inlet below the outlet for that reason.

With respect to claims 264, 265, 284, 285, Cheon discloses the claimed invention except the telecommunication system or optical device or the system with the at least one processor. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the system as disclosed by Cheon for a telecommunication system or an optical device since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

10. Claims 262, 270, 289 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheon in view of Bingler.

Cheon discloses the claimed invention except the heat transfer unit where the coolant has the direct contact with the heat-generating component. Bingler discloses the heat transfer unit having the cavity that is at least partially open to the external surface of the heat-generating component therefore the coolant is in direct contact with the component. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the heat transfer unit as disclosed by Bingler in the device disclosed by Cheon for unimpeded heat transfer.

Response to Arguments

11. Applicant's arguments filed 05/01/08 have been fully considered but they are not persuasive. Applicant's argument that the reservoir must be present although it was not shown in the device disclosed by Fox et al. is not convincing because there is no

support for such a conclusion and the reservoir could not be considered as inherently present in the system disclosed by Fox et al. as necessary element.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Boris L. Chervinsky whose telephone number is 571-272-2039. The examiner can normally be reached on 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Boris L. Chervinsky/
Primary Examiner, Art Unit 2835